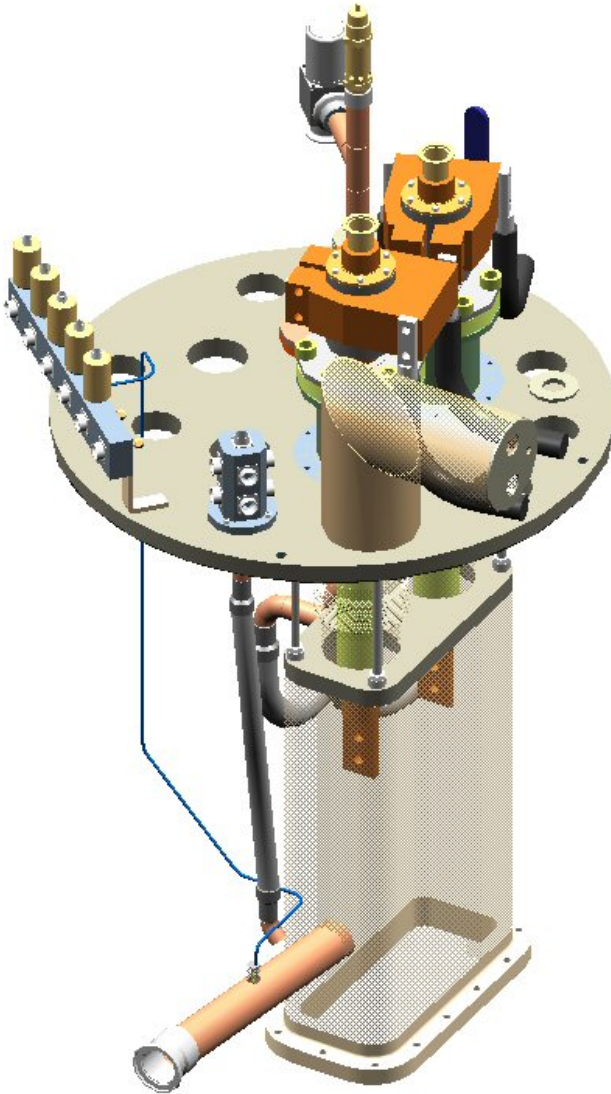


Proposed MTF Stand 6 (BTeV) Conceptual Design Review

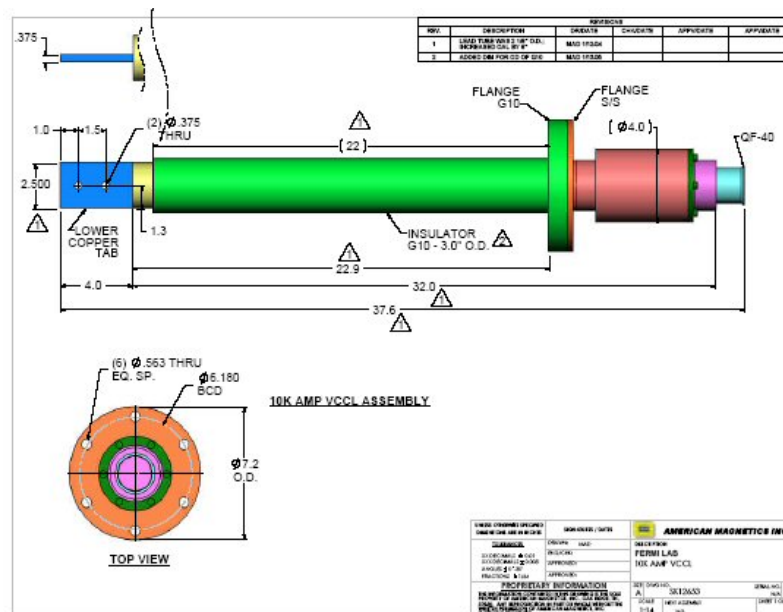
M. Wong
26 January 2005

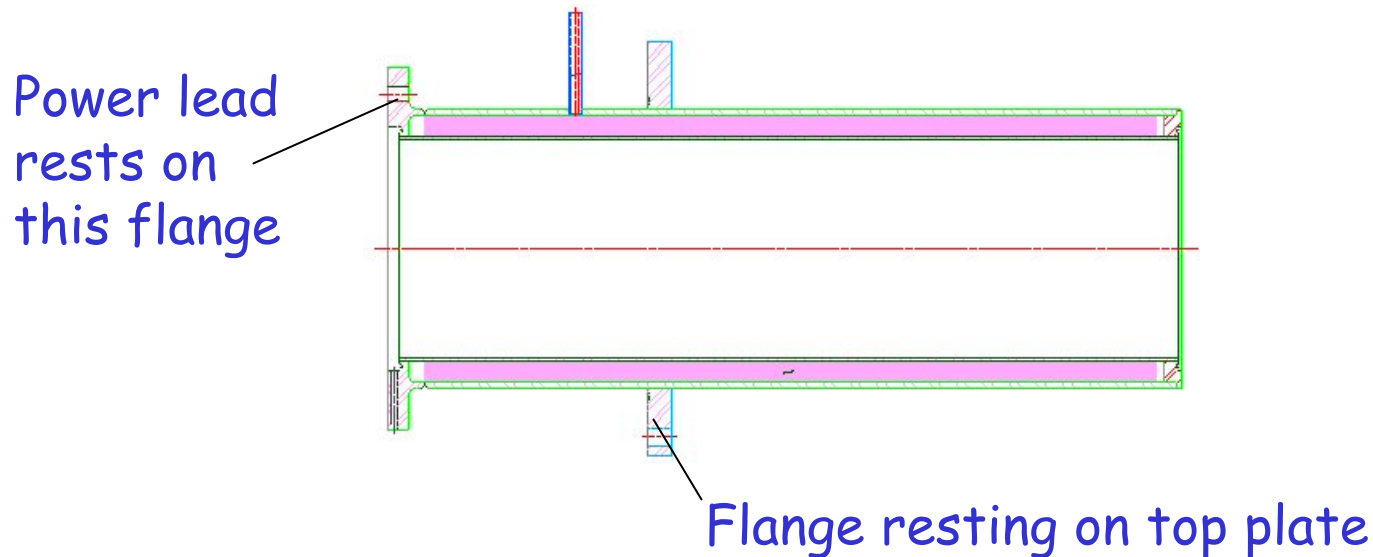
- Helium Vessel
- Power leads
 - Insulating sleeve
- Interconnects for magnets
- Thermal Shield - Copper around warm bore
- Support from top plate
- Pipe sizing, pressure drop
- Status of documentation



- Access power leads from bottom by removing bottom cover
 - Installation
 - Maintenance
- Rectangular cross section
 - Fit within piping layout
 - Inner volume 13.75" x 5.5" x 25"
- ASME BPVC vessel
 - Design pressure 215 psid
 - Sides $t=0.875"$
 - Top $t=1.125"$
(accommodate holes for power leads)
 - Bottom $t=0.875"$

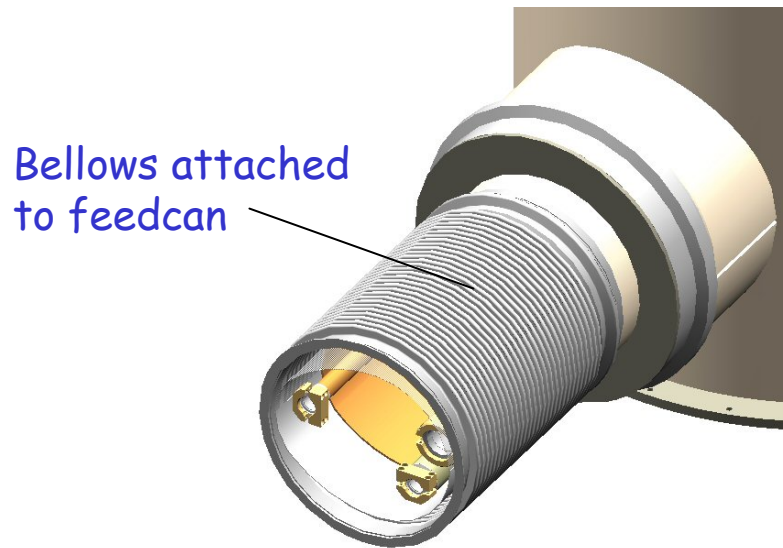
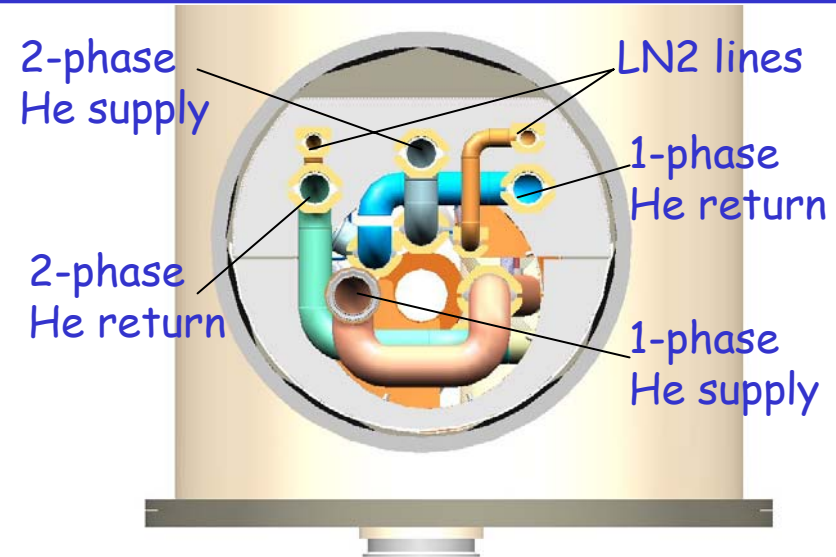
- American Magnetics Inc - custom design
 - Round top instead of flag
 - No interference with items on top plate of vacuum vessel
 - 8-inch longer
 - Leads sit within Helium bath
 - Diameter 2.5-inch (increased from 2.125-inch)
- Quoted \$28,760 for pair
- Copper lugs - similar design used in past (same diameter as other power leads)
 - Separate cost



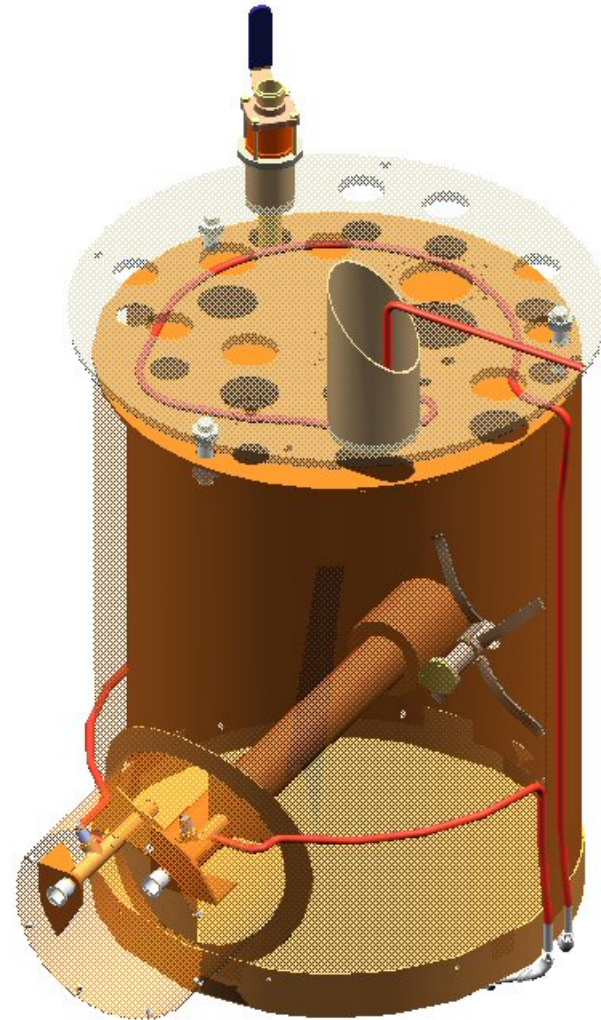
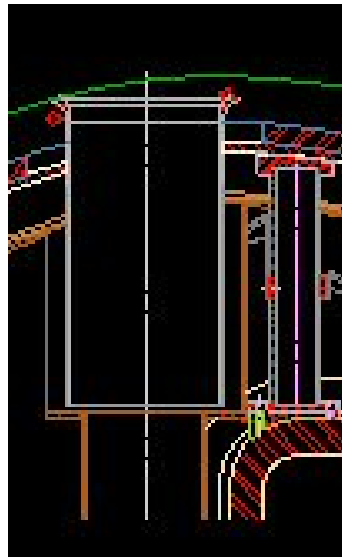


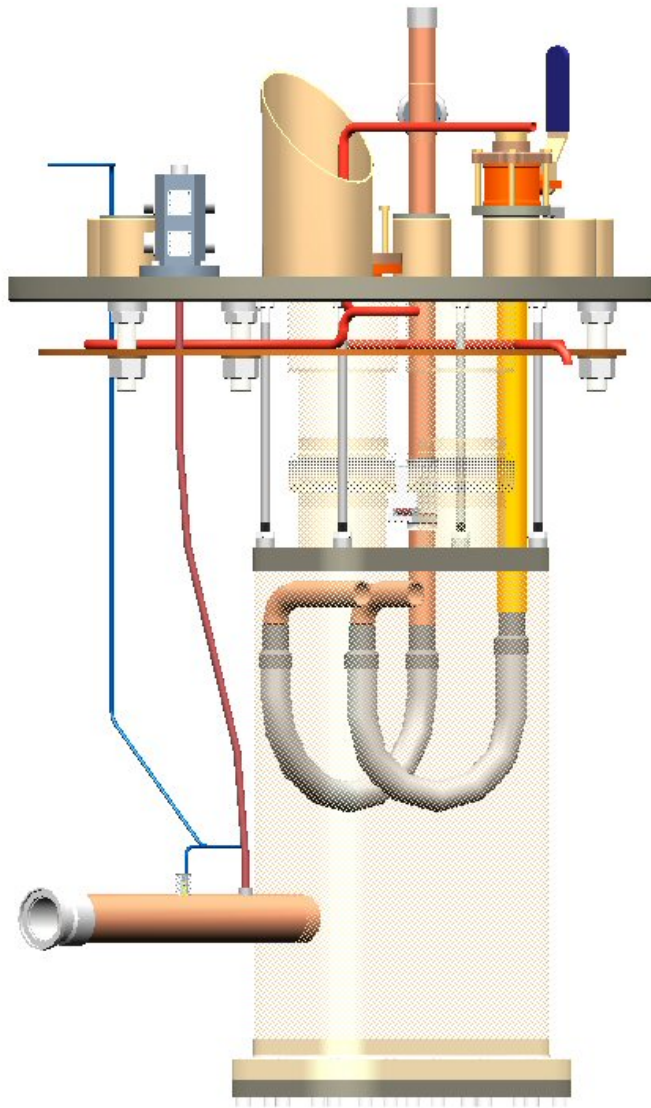
- Additional insulated length above top plate to minimize heat leak into chimney
- Similar to LHC Stand 4 and VMTF (not on current Stand 6)

- BTeV Q1 (lead end)
- BTeV Q2-Q3, X3 spool (IP end)
- Tevatron style (downstream end)
 - End cap is the same that is used on current Stand 6



- 80K Warm Bore
 - 3" ID through most of vacuum vessel
 - 5" ID for ~5.5" length at back of vacuum vessel
 - Allow additional MLI





- All systems supported from top plate of vacuum vessel
 - 80K shield: Three 1-inch diameter nylon threaded rods
 - Sized to handle friction due to shrinking plate during cooldown
 - Helium vessel: Four 0.5-inch diameter stainless steel studs
- Top plate is not removable; access to systems from bottom of vacuum vessel



Path description	Minimum pipe ID (inch)	Due to friction loss (psid)
Magnet entrance to turnaround box entrance	1.438	0.002
Turnaround box entrance to JT valve	1.247	0.005

Allowable pressure drop: 0.010 psid



Path description	Minimum pipe ID (inch)	Due to friction loss (psid)
JT valve to magnet entrance	1.500	0.005
Magnet entrance to magnet exit (including turnaround box)	1.180	0.022
Magnet to feedbox exit	1.250	0.008

Allowable pressure drop: 0.040 psid

- Engineering drawings
 - 80% of drawings exist for initial design iteration
- Engineering notes
 - Helium vessel (ASME BPVC) - *complete*
 - Vacuum vessel (ASME BPVC) - *complete*
 - Piping pressure drop - *complete*
 - Relief valve sizing
 - System venting calculations
 - Technical specification for vendor
 - IB1 ODH amendment